

REMARKS

Status of the claims:

With the above amendments, claims 10-13 have been added. Claims 1-13 are pending and ready for further action on the merits. No new matter has been added by way of the above amendments. Claim 10 has support from claims 1 and 2, claim 11 has support from claim 3, claim 12 has support from claim 4 and claim 13 has support from claim 5. Reconsideration is respectfully requested in light of the following remarks.

Interview Summary

Applicants would like to thank the Examiner for meeting with Applicant's representative on May 9, 2003. The Interview Summary completed by the Examiner is an accurate reflection of the gist of the interview.

Rejections under 35 USC §103

Claims 1-9 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over Guntherberg '399 (US Patent No. 6,165,399) in view of Wang '039 (US Patent No. 5,936,039).

Present Invention

The present invention as recited in claim 1, relates to a method of producing a composition comprising a thermoplastic resin and a rubber. In the method, a solid rubber is turned into a molten rubber by a rubber kneading machine and the molten rubber is fed into an extruder from the rubber kneading machine. In the extruder the molten rubber is melt-kneaded with the thermoplastic resin.

Disclosure of Guntherberg '399

Guntherberg '399 discloses a process for preparing thermoplastics or polymer blends comprising (A) from 5 to 95% of a water-moist elastomer component containing up to 60% of residual water, (B) from 5 to 95% of a thermoplastic polymer, (C) from 0 to 95% of a further polymer, and (D) from 0 to 70% of additives. The process comprises mixing the components A to D in an extruder with mechanical dewatering of component A, wherein the extruder has at least two rotating screws and, in the conveying direction. The extruder is essentially composed of a metering section into which component A is fed, a squeeze section which serves for dewatering component A and contains a retarding element and an associated dewatering orifice which is

present upstream of the retarding element by a distance corresponding to at least one screw diameter. The extruder also comprises a feed section in which the thermoplastic polymer B is introduced as a melt into the extruder, a plastication section with mixing or kneading elements, a devolatilization section with an orifice and in which the remaining water is removed as steam, and a discharge zone.

Disclosure of Wang '039

Wang '039 discloses processes for the preparation of thermoplastic elastomers comprising a triblend of engineering resin, dynamically vulcanized alloy of thermoplastic olefin polymer and elastomeric copolymer, and a compatibilizer for the engineering resin and alloy. The compatibilizer can be formed in a separate step or in-situ in a one step process. The processes produce compositions, which retain structural integrity at high temperature, and have good tensile properties, elongation and fluid resistance.

Removal of the Rejection over Guntherberg '399 in view of Wang '039

Guntherberg '399 discloses a process for the preparation of toughened thermoplastic or polymer blends containing a specific composition simply by mixing each component. One of the components of the elastomer, A, contains residual water and, during the process, residual water is devolatized in the devolatization section of the extruder. Gunterberg '399 also discloses that each component is fed into an extruder having at least two screws.

In Guntherberg '399, all of the components, including the elastomer, contain residual water, which is fed directly into the extruder.

In contrast, the present invention is directed to a method for producing a composition comprising a thermoplastic resin and a rubber, wherein the rubber is turned into a molten rubber, and then fed into the extruder. As disclosed in the present written description, in the case where a powdered thermoplastic resin and a rubber in the form of pellets or cut pieces are mixed and charged in an extruder, the thermoplastic resin and rubber are not melt-kneaded uniformly in the extruder, thereby causing a problem such as a deviation in the component ratio of the

resulting composition (please see page 2 of the instant written description for this description). The problem, however, has been solved by the instantly claimed invention.

While Guntherberg '399 discloses the method of feeding elastomer directly into the extruder, the present invention provides a method of turning rubber into a molten state, and then feeding the molten rubber into the extruder.

Accordingly, Applicants submit that the instant invention differs significantly from the invention of Guntherberg '399.

Wang '039 is directed to a process for preparing a thermoplastic elastomer comprising specific steps. The process of Wang '039 uses a single extruder in which a process is performed in two separate sections. Thus, an olefinic elastomer is fed directly into the extruder in the process of Wang '039 as it is in Guntherberg '399. Accordingly, when the Wang '039 and Guntherberg '399 are combined, one of ordinary skill in the art would not feed molten rubber into the extruder.

Accordingly, Applicants submit that neither Wang '039 nor Guntherberg '399 teach the process of the instant invention. The objective of Guntherberg '399 is directed to the devolatilization of residual water whereas the objective of Wang '039 is directed to a method for dynamically vulcanizing

thermoplastic olefinic polymer and an olefinic elastomer. Thus, because the objectives of the Wang '039 and Guntherberg '399 are dramatically different, Applicants submit that there is no motivation to combine the references. In other words, one of ordinary skill in the art would not look to a teaching in Wang '039, which deals with dynamically vulcanizing thermoplastic olefinic polymer and an olefinic elastomer, when reading Guntherberg '399, which has the devolatilization of residual water as its main objective.

In further support that the molten rubber is not fed into the extruder, Applicants respectfully point out that elastomer A' in Guntherberg '399 is component A without water (see column 8, lines 63-65). However, elastomer A' is at the point of passing the last squeeze section. As described in the previous paragraph in Guntherberg '399 (column 8, lines 54-62), the water is removed in the squeeze section, which is one of the sections of the extruder used by Guntherberg '399. Thus, the elastomer A', that is freed from water is in the extruder but it is not fed into the extruder. What Guntherberg '399 teaches is that component A, that has up to 60% by weight of residual water is fed into the extruder.

Thus, Applicants submit that Guntherberg '399 does not teach or even imply the steps of turning a rubber into a molten rubber and then feeding that molten rubber into an extruder as is recited in instant claim 1.

Wang '039 may teach the equivalence of different sections of an extruder and different extruders but Wang '039 is silent regarding the way of feeding DVA into an extruder and the state of a rubber fed into an extruder. In the Examples, such as example 1, Wang '039 discloses that uncured DVA components are mixed in a batch mixer. Accordingly, Applicants submit that Wang '039 does not teach or imply the steps of turning a rubber into a molten rubber and then feeding that molten rubber into an extruder as claimed in the instant invention.

Thus, Applicants submit that when both Wang '039 and Guntherberg '399 are read on the whole, one of ordinary skill in the art would not turn a rubber into a molten rubber and then feed that molten rubber into an extruder as claimed in the instant invention.

Accordingly, Applicants submit that withdrawal of the rejection is warranted and respectfully requested.

With the above remarks and amendments, it is believed that the claims, as they now stand, define patentable subject matter

such that a passage of the instant invention to allowance is warranted. A Notice to that effect is earnestly solicited.

If any questions remain regarding the above matters, please contact Applicant's representative, T. Benjamin Schroeder (Reg. No. 50,990), in the Washington metropolitan area at the phone number listed below.

Pursuant to the provisions of 37 C.F.R. §§ 1.17 and 1.136(a), the Applicants hereby petition for an extension of one (1) month to May 30, 2003 in which to file a reply to the Office Action. The required fee of \$110.00 is enclosed herewith.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37 C.F.R. §§ 1.16 or 1.17; particularly, extension of time fees.

Respectfully submitted,

BIRCH, STEWART, KOLASCH & BIRCH, LLP

By: 

Andrew D. Meikle, #32,868

P. O. Box 747
Falls Church, VA 22040-0747
(703) 205-8000

BS
ADM/TBS/bsh

Attachment: Version with Markings to Show Changes Made

Application No.: 09/441,199

VERSION WITH MARKING TO SHOW CHANGES MADE

IN THE CLAIMS:

Claims 10-13 have been added.